NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FENCE
(ft.)
CODE 382

DEFINITION

A constructed barrier to livestock, wildlife or people.

PURPOSES

This practice may be applied as part of a conservation management system to facilitate the application of conservation practices that treat the soil, water, air, plant animal and human resource concerns.

CONDITIONS WHERE THIS PRACTICE APPLIES

This practice may be applied on any area where livestock and/or wildlife control is needed, or where access to people is to be regulated. Fences are not needed where natural barriers will serve the purpose.

CRITERIA

Fencing materials shall be of a high quality and durability, and the construction performed to meet the intended management objectives.

Fences shall be positioned to facilitate management requirements.

Standard or conventional (barbed or smooth wire), suspension, woven wire, or electric fences shall consist of acceptable fencing designs to control the animal(s) or people of concern and meet the intended life of the practice.

Height, number, and spacing of wires will be installed to facilitate control and management of the animal(s) and people of concern.
Height, size, spacing and type of posts will be used that best provides the needs for the style of fence required and is best suited for the topography of the landscape.

CONSIDERATIONS

Consider installing fences in locations that will facilitate maintenance avoiding irregular terrain and/or water crossings.

Consider wildlife movement needs when locating fences.

Consider livestock management, handling, watering and feeding when locating fences.

Boundary fences shall comply with state laws and standards for construction.

Where applicable, clear right-of-ways will be established which will facilitate fence construction and maintenance.

Consider soil erosion potential when planning and constructing a fence on steep slopes.

PLANS AND SPECIFICATIONS

Plans and specifications are to be prepared for specific field sites based on the NRCS National

and State Fence Standards and appropriate state or local statutes or laws.

OPERATION AND MAINTENANCE

Regular inspection of fences should be part of an on-going management program. Inspection of fences after storm events is needed to facilitate the function of the intended use of the fence.

Maintenance and repairs will be performed as needed to facilitate the intended operation of the installed fence.

GENERAL MATERIAL AND INSTALLATION CRITERIA APPLICABLE TO PERMANENT ELECTRIC FENCES ONLY

Energizers and Components

1. Energizers for permanent electric fencing must be:
   a. High voltage/low impedance, short pulse which can produce at least 4000 volts output with all livestock containment fences charged (on) when under maximum anticipated.
   b. Recommended one digital read-out volt meter to accompany energizer.
2. A minimum of 18 feet of galvanized steel (½" minimum) grounds must be installed near the Energizer. Locate ground rods in water accumulation area and in deep soil area, preferable three, 6-foot rods, spaced at least 10 feet apart. If energizer terminals can accept copper wire, copper ground rods, copper clamp and copper wire may be used. Avoid mixing dissimilar metals to prevent electrolysis. An additional set of four 6-foot ground rods for arresting the lightning are required, no closer than 65 feet from the ground rod set at the energizer. Install one additional 6-foot galvanized (½" minimum) ground rod for each one mile of fence, located in moist area or preferred site between end of fence and energizer. For large energizer systems (14 or more joules), use a minimum of 3 additional feet of ground rods per joule of energizer output capacity.
3. For 120 volt or 240 volt energizers, install a voltage spike protector and inspect or install a ground rod at electric company's transformer pole (primary ground) and another ground rod at electric circuit breaker box (secondary ground). Both primary and secondary grounds must have less than 10 ohms resistance.
4. A lightning arrestor or lightning choke is required.

Electrical Accessories

1. Insulation used for positive charged wire(s) must be high-density polyethylene or polypropylene with ultra-violet (UV) stabilizer and capable or withstanding a minimum of 10,000 volts or more current leakage.
2. All underground wire(s) installations must be insulated, molded, high tensile strength steel 12-½ gauge or larger wire. The insulation must be high-density polyethylene or polypropylene with ultra-violet (UV) stabilizer and capable of withstanding a minimum of 10,000 volts or more in current leakage.
3. Insulators for steel and other conductive material posts must be high-density polethylene or polypropylene with ultra-violet (UV) stabilizer, porcelain or other insulators which withstands a minimum of 10,000 volts or more in current leakage.
4. Insulators for end, corner, and angle braces must be high-density polyethylene or polypropylene with ultra-violet (UV) stabilizer, or porcelain. (Do not use insulated "tubing" for brace assembly (ies).)

General Material and Installation Criteria Applicable to Temporary Electric Fences Only

1. Temporary electric fence is constructed with the intent of being left in place for only a short time period. It is not constructed as an equivalent of a permanent fence. Therefore, the criteria for a temporary electric fence requires materials, design and construction that will accomplish the intended purpose and last for the time period planned with no more maintenance than desired.
2. The number of wires and spacing will be designed to accomplish the desired result of the fence. See permanent electric fence

guidance for number of wires and spacing. Temporary net fence is available for animals such as sheep, goats, and crowding areas.

3. Portable or temporary electric fence systems include materials such as polethylene wire and tape with steel or aluminum wire woven into them, aluminum wire, 17 gauge galvanized wire, plastic and fiberglass posts, reels to roll up wire, and portable battery-operated energizers that are high voltage to turn livestock polyethylene and polypropylene wire and insulators must include ultra-violet (UV) stabilizers. Temporary fences may be attached to permanent fences to further subdivide pastures. Follow manufacturer's directions for construction, use and operation.
4.

Fencing Practice Standard
Minimum Criteria

	Cross Member[1]		Line Posts			H-Brace Uprights[1]		
Post Type Wire Type	Minimum Diameter	Length	Minimum Diameter	Length	Minimum Set Depth	Minimum Diameter	Length	Minimum Set Depth
Wood, Treated[2]								
Barbed	3”	8’	3”	6’	24”	5”	8’	36”
Smooth	3”	8’	3”	6’	24”	5”	8’	36”
Smooth, Elec.	3”	8’	3”	6’	24”	5”	8’[3]	36”
Woven	3”	8’	3”	6’	24”	5”	8’	36”
Wood, Untreated[2]								
Barbed	4”	8’	3”	6’	24”	5”	8’	36”
Smooth	4”	8’	3”	6’	24”	5”	8’[3]	36”
Smooth, Elec.	4”	8’	3”	6’	24”	5”	8’[3]	36”
Woven	4”	8’	3”	6’	24”	5”	8’	36”
Steel, T-Post[6]								
Barbed	N/R	N/R	[4]	6’	24”	N/R	N/R	N/R
Smooth	N/R	N/R	[4]	6’	24”	N/R	N/R	N/R
Smooth, Elec.	N/R	N/R	[4]	6’	24”	N/R	N/R	N/R
Woven	N/R	N/R	[4]	6’	24”	N/R	N/R	N/R
Steel, Pipe								
Barbed	2”	8’	2”	6’	24”	4”	8’	36”
Smooth	2”	8’	2”	6’	24”	4”	8’	36”
Smooth, Elec.	1”	8’	2”	6’	24”	4”	8’[3]	36”
Woven	2”	8’	2”	6’	24”	4”	8’[3]	36”

[1]Brace Posts are considered the horizontal element of the H-brace pull assembly. Bracing is required at all corner, gate, pull, and end assemblies in the fence. All vertical elements of H-Brace assemblies are considered corner posts.

[2]All wooden posts except red cedar, Osage orange or black locust shall be treated with pentachloraphenol, creosote, or chromated copper arsenate (CCA) by a method such that complete penetration of the sapwood is achieved.

[3]For permanent smooth wire fencing: the depth set into the ground should equal the height of the top wire, i.e., if the top wire is 36”, the minimum post length will be 72”, set 36” deep.

[4]Standard “T” posts, weighting not less than 1.25 pounds per foot of length, shall have a protective coating; either galvanized, painted with one or more coats of high grade weather-resistant steel point or enameled and baked.

MINIMUM FENCING SPECIFICATIONS

WIRE TYPE	NON-ELECTRIC OR ELECTRIC	GAUGE HT or M[1]	NUMBER OF WIRES[2]	LINE POST SPACING W/STAYS maximum[3]	LINE POST SPACING WO/STAYS maximum[4]	MAXIMUM PULL POST SPACING	SUITABLE LIVESTOCK AND OPTIMUM TOP WIRE HEIGHT			
							CATTLE	GOATS	SHEEP	HORSES[5]
Barbed	Non-Electric (only)	12 ½ M 15 ½ HT	7	30 feet	20 feet	1320 feet	44 inches	44 inches	44 inches	50 inches
		12 ½ M 15 ½ HT	4	30 feet	20 feet	1320 feet	44 inches	**Not Suited**	**Not Suited**	50 inches
		12 ½ M	3	30 feet	20 feet	1320 feet	38 inches	**Not Suited**	**Not Suited**	50 inches
Smooth	Electric	12 ½ HT	5	100 feet	50 feet	2640 feet	48 inches	36 inches	36 inches	50 inches
			3	100 feet	50 feet	2640 feet	36 inches	30 inches	32 inches	48 inches
			2	100 feet	60 feet	2640 feet	36 inches	**Not Suited**	**Not Suited**	48 inches
			1		60 feet	2640 feet	32 inches	**Not Suited**	**Not Suited**	**Not Suited**
	Non-electric	12 ½ HT	6	30 feet	20 feet	2640 feet	44 inches	**Not Suited**	**Not Suited**	50 inches
Woven (net)	Non-Electric				20 feet	330 feet	39 inches	39 inches	32 inches	39 inches[6]
Steel Pipe	Non-Electric		4 cross rails		10 feet		44 inches	**Not Suited**	**Not Suited**	50 inches

[1]HT = High Tensile, (type III galvanization) M = Malleable

[2]Minimum for boundaries and along roads: 4 strands barbed wire, or woven wire with barbed top wire for cattle; 7 strands barbed wire, or woven wire for sheep and goats; 6 strands non-electric smooth, or 5 strands electric smooth.

[3]Twisted wire stays for barbed wire fences must be at a minimum of 15 feet between line posts. For electric fencing, fiberglass and eucalyptus stays are acceptable. Fiberglass stays should be a minimum of 3/8" in diameter. They should be installed no further than 30' apart between line posts.

[4]Maximum distances are on level ground. Pull posts with appropriate braces must be set at significant topographical changes.

[5]Both barbed and smooth wire can injure panicked horses. Pipe, rail and/or tape fences are the safest types.

[6]When cattle or horses are grazed in addition to sheep and/or goats, use one barbed wire 10 inches above the net.